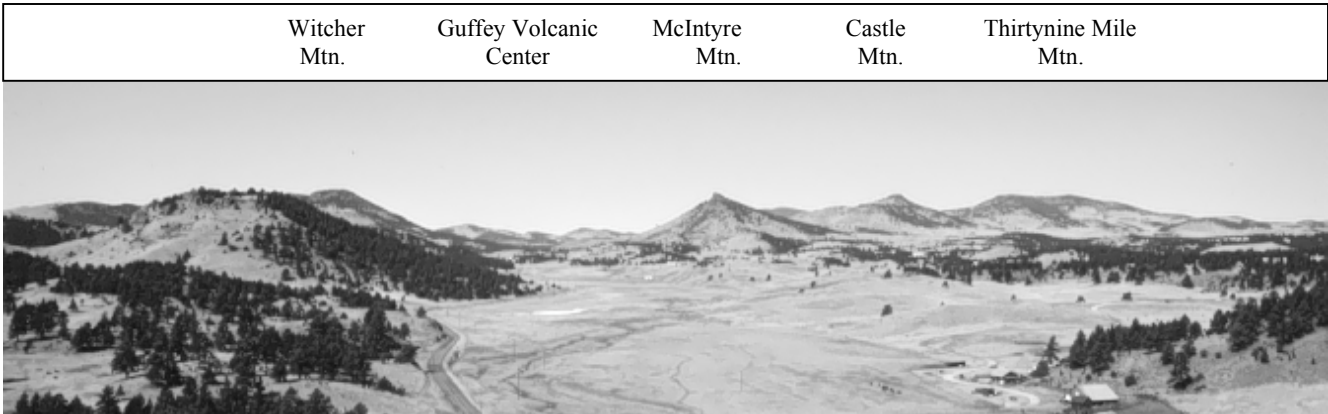


STOP ONE:

(**Note:** The panorama below was taken from the top of the high rocky ridge, which you can climb if you are very careful. From the lower viewpoint, Witcher Mtn. and the southernmost part of the Guffey volcanic center are not visible.)

You are standing on the Cripple Creek granite, dated between 1.40 and 1.43 billion years old. From here you can see the deeply eroded remains of the domes and lava flows of the Guffey volcanic center, today just remnants of the once large stratovolcanoes (similar to Mt. St. Helens and Mt. Rainer) that existed here 34 million years ago. Other mountains of the Thirtynine Mile volcanic field (including Witcher, McIntyre, Castle, and Thirtynine Mile) are comprised of the stratified lava flows (formed from molten lava) and lahars (formed from a cooler flow of mixed debris) that formed on the flanks of the Guffey volcanic center. The lahars filled in an ancient valley that was to the left of the modern Four Mile Creek that you see below. These lahars filled the valley before you to a level that would have extended far above your head. Most of these lahars were later eroded away, although remnants can be seen as outcrops (the low hills) south of the Four Mile Creek drainage, and also in the roadcut at Stop Two. When the new drainage was reestablished and eroded through these lahars, it encountered this section of the underlying, harder Cripple Creek granite, formerly a ridge that was later covered by the lahars. “Trapped” in the valley that it had already begun carving through the lahars, the stream was forced to continue eroding its channel through this mile-long section of the granite. This process resulted in the formation of the canyon that you see to the right of this viewpoint.



STOP TWO: At this roadcut we can see the lahar from the Guffey volcanic center that dammed the Florissant paleovalley, forming ancient Lake Florissant. This lake was about a mile wide and extended 12 miles to the north. Which direction did the Florissant paleodrainage flow 34 million years ago?

Notice the poorly sorted material (sediments of all different sizes) and the various rock types. Most of the rock fragments we see in the lahar are andesite (a dark, fine-grained volcanic rock) with some Cripple Creek granite (coarse grained with reddish-orange feldspar). Some of the more rounded cobbles may have been picked up along the stream channel in the paleovalley that the lahar followed. This location is near the contact between the Pikes Peak granite (1.08 billion years old), which lies to the east of this site, and the much older Cripple Creek Quartz granite (1.40–1.43 billion years old) which lies to the west. These two granitic rocks both formed in a batholith (a magma chamber that cooled underground), but came from different sources.